Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	
	CC Docket No. 95-116
Telephone Number Portability	

COMMENTS OF BELL ATLANTIC

Bell Atlantic[1] submits these comments to address the issues raised by the Commission in

the *Third Report and Order* in this proceeding concerning the implementation of new section

52.33(a)(1) of its Rules.

The Commission has requested comment on how an incumbent local exchange carrier

should apportion joint costs among number portability and other services. In deciding this

question, the Commission will necessarily have to determine what costs are strictly number

portability costs, not subject to any allocation, and what costs are joint.

A. Direct Costs of Establishing Number Portability

The Commission's *Third Report and Order* was the fulfillment of the direction from

Congress in section 251(e)(2) of the Act that the Commission adopt a system under which

telecommunications carriers bore the costs of establishing telephone number portability in a

competitively neutral manner. Consistent with the instructions from Congress, the Commission is

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[1]   Bell Atlantic-Delaware, Inc.; Bell Atlantic-Maryland, Inc.; Bell Atlantic-New Jersey, Inc.; Bell Atlantic-Pennsylvania, Inc.; Bell Atlantic-Virginia, Inc.; Bell Atlantic-Washington, D.C., Inc.; Bell Atlantic-West Virginia, Inc.; New York Telephone Company and New England Telephone and Telegraph Company.

allowing incumbent LECs to recover their costs of establishing number portability on a per line basis from their end user customers.

Attachment A to these comments is a description of the types of costs Bell Atlantic incurred to establish number portability in its network.[2] In addition, consistent with the Commission's previous decision,[3] Bell Atlantic's portion of the shared industry costs, such as the Number Portability Administration Center (NPAC), are also a direct cost of number portability.

There cannot be any dispute about these costs — they are unquestionably "costs carriers incur specifically in the provision of number portability services."[4] Carriers had to buy and install new databases and software to house number portability information, handle number portability queries and provide responses. They also had to install software in their switching systems to perform the number portability function — to recognize that a call requires a database lookup, to hold the call while that lookup is performed, to add the number portability information to the signaling associated with the call, and to deliver the call as instructed by the database. In some cases, new switch hardware had to be added to formulate and process the SS7 messages generated by number portability. Carriers had to connect their new databases to other points in their networks with new transport facilities. Carriers had to develop methods and procedures and to train their employees on how to make all these things happen and how to explain number portability to their

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[2]   This includes both the costs of "porting out" and "porting in," as both are required by the Commission's rules — allowing a Bell Atlantic customer to keep her number when she switches to another carrier and allowing the customer of another provider to keep his number when changing to Bell Atlantic.

[3]   47 C.F.R. § 52.32(c).

[4]   *Third Report and Order* ¶ 72.

customers. They also have to notify customers about the end user surcharge and modify their billing systems accordingly.

To provide number portability, carriers were required to buy new equipment. In addition to the purchase price of the equipment, and the costs of installation and maintenance, the Commission has correctly concluded that carriers may recover the other direct costs associated with it.[5] This includes depreciation, taxes, administration, return on investment, building modifications and power.[6]

The prior proceedings in this docket and the number portability query services dockets indicate that there are costs that some will say are not subject to recovery. These include costs of new and modified operations support systems and installation of additional SS7 transport facilities to enable Bell Atlantic to handle number portability queries. Both are costs directly related to the provision of number portability and are recoverable.

Operations Support Systems. Number portability fundamentally changes the organization of the telephone network and the way the network handles calls. This required extensive changes in the systems — the OSSs — that support the network. Bell Atlantic was required to deploy new systems and to modify existing systems to accommodate this change. These efforts were directly related to providing number portability, are not merely "an incidental consequence of number portability,"[7] and the costs of these efforts to develop or modify systems solely because

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[5]   *Third Report and Order* ¶ 74.

[6]   The Commission has allowed carriers to recover these direct costs even where it has disallowed general overheads. *800 Data Base Access Tariffs and the 800 Service Management System Tariff*, 11 FCC Rcd 15227, 15256 n.117 (1996).

[7]   *Third Report and Order* ¶ 72.

of the requirement to provide number portability are recoverable. A list of new and modified

systems is provided in Attachment B.

Bell Atlantic had to deploy two completely new operation support systems to enable

number portability. One system (ASMS)[8] updates the regional NPAC with number portability

information. Another (LSMS) receives information from the NPAC for forwarding to Bell

Atlantic's number portability databases. There can be no serious argument that these costs are

not direct number portability costs.

Number portability also required changes to the 24 existing systems shown on

Attachment B. For example, LFACS was modified so that telephone numbers that have been

ported to other carriers do not appear as available for assignment to other customers. DCAS can

now handle orders from other local service providers that include ported numbers, and SSNS can

include number portability information on orders from Bell Atlantic end user customers. SOAC

can now feed information to the ASMS and from there to the NPAC. SWITCH can now keep track

of numbers that have been ported in and then disconnected so that they can be returned to the

original carrier as required by the Commission's orders. The capacity of TNM and Netminder was

increased to enable them to handle the increased load caused by number portability messages.

The Act and the Commission's Rules require that number portability be accomplished

"without impairment of quality, reliability, or convenience" for the customer.[9] If Bell Atlantic had

not made these systems changes, it would not have met this requirement. For example, MARCH

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[8]   These systems are described in Attachment B.

[9]   47 U.S.C. § 153(30); 47 C.F.R. § 52.21(p).

was modified to ensure that a customer would not lose service during the porting process. Maintenance systems were modified to allow Bell Atlantic service representatives to quickly identify that a telephone number has been ported out of or into Bell Atlantic's network, enabling them either to handle the customer's problem or to direct the customer to another service provider. Without changes of these sorts, Bell Atlantic would not have satisfied its obligations under the Act and the Commission's Rules.

SS7 Transport Facilities. Bell Atlantic had to construct entirely new SS7 transport facilities to carry number portability database queries. These facilities connect Bell Atlantic's dedicated number portability databases to Bell Atlantic's SS7 network. These costs are fully recoverable.

In addition, number portability also required Bell Atlantic to augment existing SS7 transport facilities, for example links between an end office and the local STPs. Before number portability, Bell Atlantic had designed these links to accommodate regular volumes of signaling, peak period volumes and growth based on projected access line growth. These facilities were not adequate to handle the hundreds of billions of extra database lookups Bell Atlantic expects over the first five years of number portability, and service quality and network reliability would have been seriously degraded if these facilities had not been augmented.

Therefore, Bell Atlantic added capacity to these existing facilities, which now handle the new volumes of signaling generated both by existing services and number portability, while maintaining the same amount of spare capacity for growth that they had before number portability. While there is no capacity on such a multi-purpose facility dedicated to number portability, the total capacity of the facility was increased to enable the facility to handle the number portability

messages. The costs of adding this new capacity are directly related to the implementation of number portability and are fully recoverable.[10]

B. Joint Costs

The Commission correctly recognizes that the carriers have had to incur costs that were required for number portability, but provide other benefits as well, and that some portion of these joint costs should be recoverable as number portability costs.[11]

Bell Atlantic's only joint costs are the costs of upgrading switching systems with software and, in some cases, hardware to prepare them to be able to accept the software with the number portability functionality. For example, Bell Atlantic bought generic number 5E11 for Lucent 5ESS switches to permit the installation of the number portability feature.[12] Number portability was certainly the trigger that caused Bell Atlantic to upgrade these switches to generic 5E11. However, that generic also allows Bell Atlantic to buy additional capabilities and functionalities from the switch manufacturer.

The generic upgrade is the foundation on which new features and capabilities can be added. After buying the generic update, Bell Atlantic must buy other software packages to provide these new features and capabilities, such as number portability, and it pays a separate price for each such

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[10]   Some might argue that the total cost of these multi-purpose facilities — both newly installed because of number portability and pre-existing — is really a joint cost. If the Commission were to treat it in this way, it could allocate to number portability the percentage of that investment that represents the number portability usage of these facilities. Although Bell Atlantic has not run a full-blown cost study of this type, our preliminary calculations indicate that it would produce a number that is roughly the same as Bell Atlantic's augmentation investment in them.

[11]   *Third Report and Order* ¶ 73.

[12]   Comparable generics for other switches are generic 1AE13.01 for the Lucent 1AESS, Nortel generic NA007 for the DMS100 and generic 410.10 for the DMS10, and Siemens release 14E. In some switches, Bell Atlantic also had to buy intermediate generic updates to permit it to install these generics.

feature package. Number portability should bear the same proportion of the generic upgrade cost of a particular switch as the number portability software feature is of the total feature package cost for that switch. For illustrative purposes, a generic upgrade might cost $75, the number portability feature $30 and other new features based on that generic $20. In this case, 60 percent (30 ÷ 50) of the cost of the generic ($45) would be allocated to number portability.[13]

C. Database Query Services

Section 52.33(a)(2) of the Commission's Rules requires carriers to price their query services to recover the number portability costs of providing those services. As indicated in Bell Atlantic's Petition for Reconsideration, filed July 29, this definition is too narrow in that it does not permit Bell Atlantic to recover the cost of the actual usage of its network, in particular the cost of transporting around its network a call for which the N-1 carrier has not performed a query.

Under the Commission's existing rules, query service rates should be based on the cost of launching,[14] transporting[15] and processing[16] the query. They should also recover part of the cost of supporting the number portability database.[17]

These costs should be allocated to the query service based on the number of database queries it performs for other carriers. For example, if one percent of all queries are done for other carriers, one percent of these costs should be recovered through the query tariff.

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[13]   At this point, Bell Atlantic does not plan to buy any feature packages for these generics beyond what it has already purchased.

[14]   Switch software and hardware costs and engineering and translations work.

[15]   SS7 network investment.

[16]   The number portability database.

[17]   The two new OSSs that support the database, links from the OSSs to the database and to the NPAC, and Bell Atlantic's share of the Type 1 costs.

Conclusion

Incumbent local exchange carriers have already spent billions of dollars to deploy number portability, and the Commission has now established a way for them to recover this money. Bell Atlantic urges the Commission to act promptly on the remaining issues so that carriers can prepare tariffs for a February 1, 1999, effective date.

Respectfully submitted,

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Number Portability Network Cost Elements

Service provider number portability databases.	Store number portability information.	Purchase number portability database pairs.	Number portability databases store number portability records, process information when number portability queries are received, and ensure proper call routing.
Location Routing Number (LRN) software.	Provides number portability capability.	Purchase new switching software enhancements provided for Lucent, Nortel and Siemens switches and Lucent and Nortel operator services switches.	Provides the LRN functionality required to route number portability calls.
Service Switching Point (SSP) generic software upgrades.	Provide dial tone and network switching functions.	Purchase new software.	Bell Atlantic had to buy an additional switch generic in order to allow it to install LRN software.
Switch and SSP hardware.	Provides dial tone, network switching and SS7 signaling functionality.	Purchase additional memory, processor and SS7 signaling message creation capacity for end office, tandem and operator services switches.	Number portability significantly increases demands on switch memory, processor and SSP signaling message creation equipment. Memory and processor upgrades were required in some switches to ensure that number portability did not degrade SS7 signaling and switch call processing capacity and performance. Query capacity as well as the quality of services provided from these switches would have deteriorated without these upgrades. Upgrades also allowed operator positions to see LRNs.
Links between Bell Atlantic systems and NPAC.	Transfer number portability information to and from NPAC.	Obtain new links.	Bell Atlantic must send number portability information to NPAC from its ASMS and receive information in its LSMS.
Links from other Bell Atlantic systems to LSMS and ASMS.	Transfer number portability information within Bell Atlantic.	Purchase/construct new links.	Bell Atlantic must transfer information to its ASMS and from LSMS to its number portability databases.

SS7 links and terminations — Local Signal Transfer Point (STP) to number portability databases.	Connect local STPs to the number portability databases.	Construct new links.	To transmit number portability messages between STP serving the switches originating a query and the number portability database.
SS7 links and terminations — SSPs to number portability databases.	Connect SSPs directly to the number portability number databases.	Construct new links.	To transmit number portability messages between switches originating a query and the number portability database.
SS7 links and terminations — SSP to local STP.	Connect SSPs to the local STPs.	Augment link capacity where needed.	To transmit number portability messages between switches originating a query and local STP. Number portability introduced additional signaling traffic, which exhausted the capacity of existing links in some cases and required additional capacity.
Testing expense.	Ensure network integrity.		To ensure that number portability elements and existing services perform properly when number portability is implemented.
Engineering and translations expense.	Activate NPA-NXXs to support number portability.	Set LRN triggers against NPA/NXXs, open NXX codes as normalized office codes and administer tables to affect LRN routing.	To provide the code activation and routing information the switch needs to recognize when a portable NPA/NXX has been called and invoke LRN routing.
Number portability dedicated staff.	Supports number portability.		To manage number portability implementation; ensure timely equipment deployment, trouble resolution, staff regional systems support, systems application support, field support, and regional CLEC Control Center support.
Maintenance and administration.	Maintain and administer number portability infrastructure.		To maintain, administer and provision number portability databases on an ongoing basis.

Operations Support Systems

New Systems		
ASMS — Advanced Service Management System	Sends number portability information to the NPAC and receives error information and other messages back from NPAC.	New system
LSMS — Local Service Management System	Receives data from the NPAC and updates number portability databases.	New system
System Modifications		
LFACS — Loop Facilities Assignment Control System	Maintains the cable inventory and assigns cable and pair to the service order.	To enable LFACS to ensure that ported telephone numbers do not show up as available for assignment.
SOAC — Service Order Analysis & Control	Receives service orders from the service order processor and sequences/controls their flow into the subtending systems.	To recognize and route number portability data on service orders to other systems, including ASMS (for upload to the NPAC).
SWITCH	Performs telephone number inventory functions and assigns central office equipment.	To perform telephone number administration functions, including recognition of ported-in numbers that must be returned to a CLEC after an aging process.
FACS — Facilities Assignment Control System	Front end facilities system linked to LFACS, SWITCH and SOAC	To enable FACS to recognize the telephone number administration functions associated with LFACS, SWITCH and SOAC.
MARCH and PARIS	Mechanized systems that inputs service order information from SOAC directly into Bell Atlantic switches.	To receive the number portability information and update switches. To mechanize the ability to port single number from DID block. To ensure there is no loss of service while a customer is porting from one provider to another.
NSDB-WFA — Network Services Data Base-Work Force Administration	Maintenance trouble report systems.	To enable systems to identify, process and track ported telephone numbers to ensure that repair systems are able to differentiate between ported and non-ported numbers.
LMOS — Loop Maintenance Operations System	Maintenance trouble report system.	To enable LMOS databases to identify, process, and track ported telephone numbers to ensure that repair systems are able to differentiate between ported and non-ported numbers.

MLT — Mechanized Loop Test	Test system.	To enable MLT to identify and test lines with telephone numbers that have been ported in to Bell Atlantic's network because systems must now use the location routing number (LRN), rather than NPA-NXX, to do so.
NetMinder	Provides network traffic management functionality for the circuit switched and SS7 networks.	To handle increased load caused by new number portability traffic messages and to allow NetMinder to read, analyze, and respond to number portability status messages provided by the network elements.
TNM — Total Network Management	Provides centralized surveillance and control of the circuit switched, SS7 and broadband networks.	To enable TNM to handle the increased load caused by new number portability messages and to enable continued surveillance of the network including the ability to monitor number portability traffic.
E911	Handles the routing of E911 emergency calls and routes them to the correct emergency reporting location.	To enable the unlocking of individual line records to allow CLECs to update E911 database and to enable 911 personnel to direct database problems to the correct service provider.
MACSTAR	Provides Centrex customers with the ability to make changes and verify features.	To enable MACSTAR to be able to communicate with switches that operate on number portability protocol.
RETAS — Repair Trouble Administration System	System used by CLECs to enter and track trouble reports	To enable other service providers to enter trouble reports on numbers which have been ported and to see the status of those reports. Without this capability, processing of trouble reports for the affected line and non-ported lines could be delayed.
STARMEM	To allow repair trouble entry personnel to compare telephone number records and switch translations.	To enable STARMEM to provide downstream porting indicators to other OSSs. For example, LiveWire uses STARMEM to check status of aging number before returning it to inventory. STARMEM checks the SWITCH translations to assure aging number is not ported. STARMEM is also used by central office technicians to assure new numbers used during outside plant upgrades are not ported.

CRIS — Customer Record Information System	To bill non-carrier customers.	To provide the system with the capability to recognize ported numbers. This is driven by billing and rating applications that are distance dependent (within a rate center) and need to be able to associate a telephone number with a switch. For shared revenue calls, for example, where Bell Atlantic's operator services handles a call billed to a third party, the system needs to know the service provider associated with called number. Additionally, system changes are required to enable the billing of the end user surcharge.
CABS — Carrier Access Billing System	To bill for access services.	To provide the system with the capability to recognize ported numbers. Some terminating access is distance dependent and CABS needs to know the switch associated with a ported-in telephone number to properly rate that access. Likewise, on a ported-out number, meet-point billing arrangements require we are able to identify the switch associated with a number to properly divide shared access revenues (*i.e.*, where a CLEC uses Bell Atlantic's tandem).
ITORP — Independent Company Billing	To bill for independent LECs.	To provide the system with the ability to recognize ported numbers. This is similar to the meet-point CABS requirements in that to do the settlements between LECs, billing systems need to know the switch associated with a telephone number to bill correctly.
SSNS — Sales and Service Negotiation System	Ordering system.	To enable the required number portability data elements to be entered as part of the service order process.
LiveWire	Customer address and telephone number administration databases.	To provide information that reaches the NPAC to effectuate porting out and to generate notification to other service provider when porting in.
DCAS — Direct Customer Access System	Ordering system.	To enable the automation of local service requests (LSRs) from CLECs that involve a ported telephone number and to support PICs on CLEC telephone numbers ported to Bell Atlantic.

STARREP	To simplify trouble report entry for trouble repair personnel and to interface with LMOS and NSDB - WFA/C.	To prevent Bell Atlantic from starting to process troubles reports on numbers which had been ported to another service provider, which would delay processing of trouble for affected line as well as interfere with the timely processing of requests for non-ported lines.
INPLANS/ITE — Integrated Traffic Engineering	Integrated network planning system.	To enable INPLANS/ITE to obtain information from number portability systems to plan for the capacity, growth and throughput of the facilities.
Predictor	Network testing system.	To enable system to interact with switches using the number-portability-required ten-digit protocol.